

Chapter 15

ICT in Indian Higher Education Administration and Management

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Abstract Indian higher education is undergoing rapid transformation in terms of access, equity and quality. As the GER in Indian higher education is increasing, the government is setting new time-bound targets for achieving 30 % GER. Enhanced allocation of funds, encouraging private initiatives in higher education, collaboration with foreign universities are some of the recent and important developments. These developments are backed by several policy initiatives through the recommendations of National Knowledge Commission, Yashpal Committee Report, four bills pending in the Indian Parliament, 12th five-year plan and Rashtriya Uchchatar Siksha Abhiyan (RUSA). Not figuring in the top 100 or 200 universities have been an issue articulated by several Indian leaders including President of India in several forums. In a way, Indian higher education seems to be charged up focussing sharply on quality. ICT integration is a necessary condition to achieve these goals. There have been several major initiatives in integrating ICT in higher education led by the University Grants Commission. ICT integration in management and administration of higher education has taken deeper penetration in private universities and institutions. With the objective of generating an informed discourse, this chapter documents integrated data and information system in Indian higher education, though it is in its infancy compared to Indian experience of such EMIS in school education especially for planning, monitoring and evaluation, and policy research.

Keywords Indian higher education system • Policy initiatives • Student service management • Academic management • Higher education information system

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List of Acronyms

AIU	Association of Indian Universities
AICTE	All India Council for Technical Education
CABE	Central Advisory Board of Education
IIT	Indian Institute of Technology
INFLIBNET	Information and Library Network
NCHER	National Commission for Higher Education and Research
NMEICT	National Mission on Education through Information and Communication Technology
NKC	National Knowledge Commission
NAAC	National Assessment and Accreditation Council
NCTE	National Council of Teacher Education
NPTEL	National Programme on Technology Enhanced Learning
NUEPA	National University of Educational Planning and Administration
RUSA	Rashtriya Uchchatar Siksha Abhiyan
SAMS	Students Academic Management System
SSA	Sarva Siksha Abhiyan
UGC	University Grants Commission
INSAT	Indian National Satellite System

15.1 Introduction

The Indian higher education system is the third-largest system in the world next only to the USA and China (Wikipedia 2013). The system is expanding fast, with the government policy pitching for raising the GER to 30 % by 2030 compared to approximately 12 % in 2012. Indian higher education is poised to grow much larger during the next 15 years. The agenda of expansion is inclusion and exploiting the demographic dividend of India. This phenomenal growth and expansion in higher education needs to be seen in the context of India's multi-cultural character; a society that houses all 12 major religions of the world, 16 major linguistic groups and an equivalent number of languages in which higher education is offered. With distinguished cultural traditions, mores and values, and the entry of foreign students in many campuses, Indian higher education presents an awesome fusion of colours.

Indian higher education is also undergoing qualitative transformation, the major focus being quality improvement. Quality of Indian higher education has been the subject of scrutiny time and again by various committees appointed by the University Grants Commission (UGC), especially for its role in developing front-line manpower for India's economy and international relations. National Knowledge Commission (NKC) appointed by the Prime Minister, Yashpal Committee (YC) appointed by the then Minister of Human Resource Development and several bills on higher education introduced in the Indian Parliament are some of the indications of this twin emphasis on expansion with quality.

As of now, Indian higher education does not have any authentic comprehensive information system for planned development, although the Ministry of Human Resource Development initiated a project on Survey of Higher Education in India in 2012 (Government of India 2013b).

The scenario of ICT application in Indian higher education provides an interesting study. There are a few initiatives at the national level; however, there is no major articulated policy on ICT in planning and management. There are also some innovative initiatives by certain states, and a few higher education institutions, especially private institutions.

In this chapter, we will present a brief overview of Indian Higher Education to lay down the context in which ICT in educational administration can be studied. We will examine ICT policies, and national, state and institutional initiatives against a framework of ICT application in higher education. We will conclude looking at the ‘things to come’ in the near future.

15.2 Indian Higher Education System

Education is on the concurrent list—a shared responsibility of the union and state governments. Universities can be set up either with central or state legislation. All central universities and deemed universities have been set up with central legislation. State and private universities have been set up with the approval of the state legislature. Thus, private universities are state universities, except that they are not funded by the state. However, all universities and colleges need the approval of the UGC under appropriate clauses.

Recommended by National Policy on Education 1986, National Assessment and Accreditation Council (NAAC) was set up in 1994 to assess the quality of higher education institutions and accredit them. NAAC, funded by the UGC, functions as an autonomous organisation. Indian higher education is also supported by a few other statutory authorities, namely All India Council for Technical Education (AICTE), National Council of Teacher Education (NCTE) and Distance Education Bureau (DEB) for quality control in technical and management education, teacher education and open and distance education, respectively. Despite such quality control mechanisms on ground, quality has continued to be a crisis in a large majority of higher education institutions; none of the Indian higher education institutions figure in the TOP 200 Universities in the world.

Association of Indian Universities (AIU) is another important player in coordination with higher education. AIU is an association of Indian universities registered under Societies Registration Act; it does not enjoy any statutory powers. The primary concern of AIU is recognition and equivalence of degrees/diplomas awarded by the various universities in India and abroad for admission to higher courses in Indian Universities. The AIU maintains a strong publication programme; it also offers capacity building programmes to higher education personnel.

Indian higher education comprises 574 universities and 35,539 colleges (as on 31.3.2012) with an estimated enrolment of 20.3 million students (Table 15.1).

During the years 2001–2004, enrolment grew at more than 6 % per year. Enrolment grew at an average of nearly 9 % per year during the last 8 years. However, growth in enrolment is not uniform across all levels (Table 15.2).

Student enrolments in affiliated colleges far outweigh enrolment in university departments. 89.38 % of undergraduate students are enrolled in affiliated degree colleges; even at the postgraduate level more than 72 % students are enrolled in

Table 15.1 Growth of enrolment in higher education (2001–2012)

Year	Enrolment	Increase over preceding year	Percentage increase
2001–2002	8,964,680	565,237	6.7
2002–2003	9,516,773	552,093	6.2
2003–2004	10,201,981	685,208	7.2
2004–2005	11,038,543	836,562	8.2
2005–2006	12,043,050	1,004,507	9.1
2006–2007	13,163,054	1,120,004	9.3
2007–2008	14,400,381	1,237,327	9.4
2008–2009	15,768,417	1,368,036	9.5
2009–2010	17,243,352	1,474,935	9.4
2010–2011	18,670,050	1,426,698	8.3
2011–2012 ^a	20,327,478	1,657,428	8.9

^a Provisional

Source UGC annual report 2011–2012; (http://www.ugc.ac.in/pdfnews/Annual_Report_2011-2012_English_Final.pdf)

Table 15.2 Student enrolment^a: level-wise: 2011–2012

Sl. No	Level	University departments/ university colleges	Affiliated colleges	Total (% to grand total)	Percentage in affiliated colleges
1.	Graduate	1,853,109	15,602,420	17,455,529 (85.87)	89.38
2.	Post-graduate	693,864	1,798,608	2,492,472 (12.26)	72.16
3.	Research	127,780	33,092	160,872 (0.79)	20.57
4.	Diploma/ certificate	132,620	85,985	218,605 (1.08)	39.33
	Grand total	2,807,373	17,520,105	20,327,478 (100.00)	86.19

^a Provisional

Note Research includes M.Phil and Ph.D

Source UGC annual report, 2011–2012

Table 15.3 Student enrolment: faculty-wise^a: 2011–2012

Faculty	Total enrolment	Percentage to total
1. Arts	7,539,495	37.09
2. Science	3,789,967	18.64
3. Commerce/management	3,571,083	17.57
4. Education	732,627	3.60
5. Engineering/technology	3,261,590	16.05
6. Medicine	715,706	3.52
7. Agriculture	97,313	0.48
8. Veterinary sciences	28,504	0.14
9. Law	373,246	1.84
10. Others	217,947	1.07
Total	20,327,478	100.00

^a Provisional*Source* UGC annual report, 2011–2012

the affiliated degree colleges. Overall, 86.19 % enrolment in higher education institutions is in the affiliated colleges. There is wide regional variation in student enrolment as well as faculty-wise enrolment (Table 15.3).

Further disaggregation of enrolment data indicates that the largest proportion of students is enrolled in Arts (37.09 %), followed by Science (18.64 %), Commerce and Management (17.57 %) and Engineering and Technology (16.05 %). Enrolment in other professional courses range between a low of 0.14 % in Veterinary Sciences to 3.49 % in Medicine.

Thus, expansion of higher education has not been uniform. Special concern exists about the low enrolment in professional courses that offer better employment opportunities to young graduates and skilled manpower for the service and production sectors. Another important concern is the high enrolment in Arts courses with the lowest employment potential.

15.3 Higher Education Policy Initiatives

A description of the Indian higher education scenario will be incomplete without taking a close look at some of the major policy initiatives by the Government of India. We take a brief overview of the recommendations of the National Knowledge Commission (NKC 2005); Committee on ‘Renovation and Rejuvenation of Higher Education’ (2008) and the four bills on higher education pending before the Indian Parliament. We will present some details from the 12th Five Year Plan and Rashtriya Uchchar Siksha Abhiyan (National Mission on Higher Education) that lays down the road map for future developments in Indian higher education.

15.3.1 National Knowledge Commission

The NKC summarises the agenda of reform in higher education system under three broad heads, namely (1) expansion, (2) excellence and (3) inclusion.¹

The NKC recommends creating ‘many more universities’, changing the system of regulation of higher education, enhancing funding and establishing 50 national universities as the major strategies for expansion of higher education. NKC proposes establishment of 1,500 universities and also 50 national universities as pace-setting institutions that can provide education of the highest standard. Such universities can be set by the government, or non-government bodies with liberal funding. NKC rightly argues that ‘such expansion would require major changes in the structure of regulation’.

Instead of multiple regulatory authorities like the UGC, AICTE, NCTE, DEB, etc., NKC recommends establishment of an Independent Regulatory Authority for Higher Education (IRAHE) by an Act of Parliament that would be responsible for setting the criteria and deciding on entry to higher education institutions.

The NKC strongly recommends increase of public funding of higher education to 1.5 or 25 % of the total allocation to education—6 % of the GDP. However, NKC also recognises that even 6 % would be inadequate and recommends diversification of funding through better utilisation of land available to universities, rationalising fees to fetch at least 20 % of the total expenditure in universities.

The NKC proposes to achieve excellence through a three-fold strategy comprising (1) reforming existing universities, (2) restructuring undergraduate colleges and (3) promotion of enhanced quality.

The NKC strongly advocates ‘inclusion’ in higher education. It recommends introduction of an extensive National Scholarship Scheme targeting economically underprivileged students and students from groups that have been historically socially disadvantaged to facilitate their participation in higher education. Interestingly, the NKC is silent on the need for inclusion of differently abled students, though according to the law of the land, special provisions must be made to encourage physically and mentally challenged students to participate in higher education to the best of their capabilities.

15.3.2 Renovation and Rejuvenation of Higher Education (Yashpal Committee Report)

The Yashpal Committee was originally set up as UGC/AICTE Review Committee with the terms of reference restricted to the review of UGC and AICTE—roles and structures.² The scope of the committee was later enlarged to cover issues related to

¹ <http://knowledgecommission.gov.in/>.

² http://mhrd.gov.in/sites/upload_files/mhrd/files/YPC-Report_0.pdf.

Renovation and Rejuvenation of Higher Education (The report made comprehensive recommendations on higher education mostly overlapping with the recommendations of NKC). Some of the salient recommendations are:

- All universities must be research-cum-teaching institutions; teach both undergraduate and postgraduate classes.
- On financing and provision, its main recommendations include common benefits for both central and state universities; complementary funding through philanthropy and mobilising alumni through appropriate changes in regulations; provision for hiring professional fundraisers and investors to attract non-government funding sources.
- To improve quality of teachers and establish accountability, YC recommends student assessment of teachers. It also recommends easing out teachers whose feedback record remains poor in successive years.
- YC makes a series of recommendations on regulatory mechanisms like submission of all private universities to a national accreditation system; welcome foreign universities only from the list of Top 200 and be subjected to all the regulations applicable to Indian universities including awarding Indian degrees.
- The most important recommendation, similar to that of NKC, on regulatory mechanism is setting up an overarching new regulatory body—the National Commission for Higher Education and Research (NCHER) to subsume the functions of UGC, AICTE, NCTE and other such statutory organisations.

15.3.3 Four Bills on Higher Education

The Ministry of HRD has introduced four bills in the Parliament that intend to shape the future of Indian higher education.³ The four bills are: National Accreditation Regulatory Authority for Higher Educational Institution; Foreign Educational Institutions (Regulation of Entry and Operations) Bill, 2010; Prohibition of Unfair Practices in Technical Educational Institutions, Medical Educational Institutions and University Bill, 2010; and Educational Tribunal Bill.

The intention of all these four bills is to assure quality in higher education. However, the tenor of all the bills represents two major trends, namely control orientation and centralization, which is against the fundamentals of a federative democratic polity. As would be evident, ICT as a means of improved quality of higher education and governance does not find a place in the policy initiatives.

³ Since these bills are still pending in the Parliament and not passed, we are not providing the details here. The Higher Education Bills can be accessed at <http://www.prsindia.org>.

15.3.4 Rashtriya Uchchatar Siksha Abhiyan (RUSA: National Higher Education Mission)

RUSA was initiated in 2012 by the Ministry of Human Resource Development with UGC as the nodal agency for heading the mission.⁴ RUSA follows the footsteps of SSA (Sarva Siksha Abhiyan—Education for All Mission) and RMSA (Rashtriya Madhyamik Siksha Abhiyan—National Secondary Education Mission). In a way, it is logical since higher education stands on the shoulder of secondary education as much as secondary education depends upon elementary education. In tune with the SSA and RMSA, RUSA also has the twin focus of expansion and/with quality. In order to achieve these twin goals, the document deals elaborately with institutional mechanisms of setting up new institutions, new courses, empowering higher education institutions with autonomy, encouraging private initiative, entry of foreign universities and a variety of other interventions.

15.4 ICT in Indian Higher Education Management

At the backdrop of the Indian higher education scenario and the policy initiatives described earlier, it will be useful to examine ICT in higher education management within a meaningful framework (Fig. 15.1).

There are seven major domains of management of higher education. These are academic, human resources, infrastructure, finance, student services, administrative management, and linkage and network (Mukhopadhyay 2005). These and other areas can be classified into three broad domains, namely Academic Management, Student Services Management and Administrative Management.

Further, ICT in management of higher education has to be examined at three different levels, namely national, state and institutional levels. Applications of ICT in institutional management are at the affiliating university and unitary institute level, namely unitary universities and colleges. For example, although every state and individual higher education institute can have its own ICT policy in higher education, in India, policy is ascribed to the national setting. In the following pages, we will deal with various issues of ICT in higher education management and also refer to the state and institutional initiatives and innovations in ICT in management of higher education.

15.5 ICT Policy in Higher Education

With the explosion of ICT, India explored the use of computer and Internet-based ICTs for education. EDUSAT—India's first dedicated satellite on education was launched in 2004 (Mukhopadhyay 2006).

⁴ http://www.ugc.ac.in/ugc_notices.aspx?id=224.

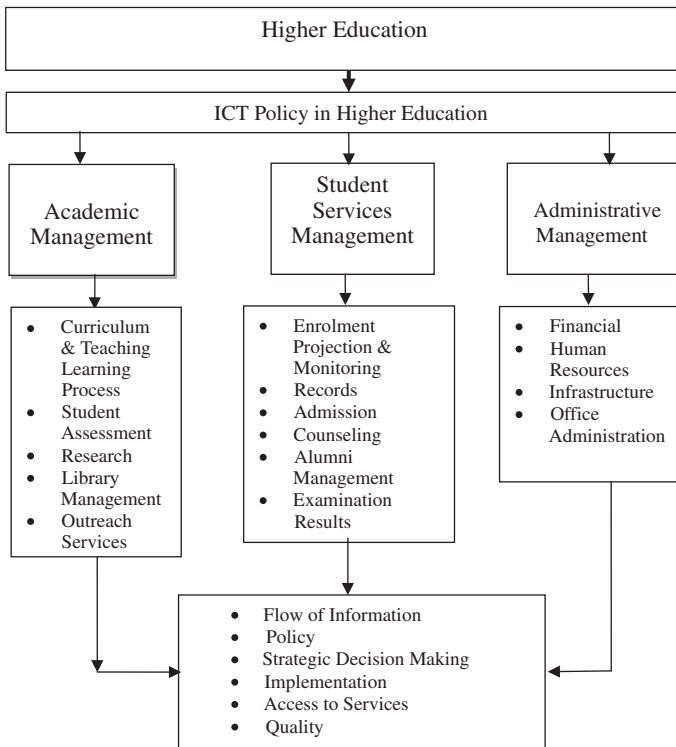


Fig. 15.1 Framework for use of ICT in higher education management

Government approved the National Policy on Information Technology only in 2012, (Government of India, 2013c <http://www.pib.nic.in/newsite/erelease.aspx?relid=87875>). The aim of the policy is to ‘leverage ICT to address Nation’s Developmental Challenges’. The policy is oriented towards the use of ICT to promote decentralisation and empowerment of citizens. One of the objectives of the National Policy is to ‘leverage ICT for key Social Sector initiatives like *Education*, Health, Rural Development and Financial Services to promote equity and quality’ [<http://www.pib.nic.in>]. Unlike school education where there is an articulated *National Policy on Information and Communication Technology (ICT) in School Education*, IT for Change (2013) (<http://www.itforchange.net>), there is no separately articulated ICT policy in Indian higher education. ICT policies in higher education, hence, have to be derived out of different documents of the UGC and government of India. We refer to two recent documents, namely the 12th Five Year Plan that lays down the road map of educational development during the next five years and Rashtriya Uchchatar Siksha Abhiyan (RUSA) or National Mission on Higher Education that provides long-term goals in Indian higher education.

The 12th FYP (Government of India, 2013a) recognises that the ‘The country lacks current and comprehensive data for evidence-based policymaking and effective planning...’. The document goes on to clarify the need for a comprehensive data book

with complete facts and figures, and trends across time and space, and with disaggregation at state level. The 12th FYP also recommends aligning the Indian higher education data with International Standards Classification of Educational Data (ISCED 2011) [<http://www.uis.unesco.org/Education/Documents/isced-2011-en.pdf>]. This will help develop a better understanding of the developments in higher education in the country.

To translate these policy perspectives, the Ministry of Human Resource Development, Government of India constituted a taskforce. On the basis of its recommendation, an online survey of higher education in India has been started. Both private and public institutions of higher education will be responsible for providing ‘reliable and timely data on student enrolment, and other ‘strategic information’. The Ministry intends to use this web-based higher education data management system for tracking and monitoring the progress in higher education in different regions of the country. It further enunciates that the ‘Higher education database management system can also provide the desired data to various stakeholders such as national academic depository, planning bodies, research entities, students and other academic bodies’.

ICT does not figure in the RUSA document in any significant manner, except for one reference to establish a Management Information System in Higher education (<http://www.mhrd.gov.in/>). The only additional input is seeking state’s involvement in developing the MIS. It asks states to take advantage of the high speed connectivity already established through the National Knowledge Network (NKN) National Knowledge Network (2013).

The major policy initiative that can be derived from these two main government documents—the NKN and 12th FYP—is to develop a comprehensive database on higher education that can be used for data and information-based policy making, and assessing and monitoring developments in higher education in India.

The story of the development of educational database and educational management information system would remain incomplete without reference to National University of Educational Planning and Administration (NUEPA), former National Institute of Educational Planning and Administration (NIEPA), for, it pioneered educational management information systems in India (Box 1).

Box 1: National University of Educational Planning and Administration, New Delhi

National University of Educational Planning and Administration (NUEPA) is a specialist institution on educational policy, planning, management, and programme evaluation. The university is fully funded by Government of India; it is the think tank of the Ministry of Human Resource Development of the Government of India.

NUEPA, then NIEPA pioneered the development of educational management information systems in India; strongly supported by UNICEF. Beginning with the development of a database on the District Primary Education Programme (DPEP) in the early 1990s, NIEPA created District

Information System in Education (DISE) that is now recognised as India's official database on primary education. With the enactment of Right to Education Act in 2009, this database has been modified and upscaled to cover elementary education (grades 1–8). As the government of India moved on towards universalisation of secondary education based on the CABE Report, the database has been extended to cover education up to 12th grade. The secondary education database was begun as Secondary Education Management Information System (SEMIS). Later, the databases on elementary education and secondary education were merged together to create a comprehensive school education database—U-DISE.

Only recently, NUEPA was assigned the responsibility of developing educational management information system in higher education by the Ministry of Human Resource Development, Government of India.

It is evident that, (a) NIEPA pioneered ICT in educational management in India, and (b) educational management information system had a bottom-up approach—it began with primary education, moving up to cover elementary and secondary grades. Higher education has lagged behind and is still in its infancy as far as the educational database is concerned.

15.6 ICT in Academic Management

Academic Management comprises of several areas like curriculum and teaching-learning process, student evaluation, research, library management and management of extension and outreach programmes.

Application of ICT in higher education began with, and almost remained confined to, Curriculum Development and Teaching-Learning Process. It began with educational television programmes under Country Wide Classroom Project of the UGC. In the draft of the Sixth Five Year Plan of India, UGC proposed the establishment of centres of mass communication and educational technology in selected universities in the country. With the launch of INSAT in 1982, the UGC—INSAT television project, named 'Countrywide Classroom' was launched to bring qualitative and quantitative improvements in higher education. CWC was launched in 1984. The objectives were to upgrade, update and enrich the quality of education at tertiary level. The target audience of CWCR project were the undergraduate college students studying in colleges located in the smaller towns and rural areas of India. However, a large non-student population also view these programmes. These programmes were produced in EMRCs and AVRCs. UGC provided television sets to colleges to enable viewing by students.

In recent years, the Ministry of Human Resource Development initiated several ICT Missions to improve the quality of teaching-learning process in higher education.

15.6.1 National Mission on Education Through Information and Communication Technology (NMEICT)

Under this Mission 20,000 institutions of Higher Education and nearly 10,000 University Departments were to be provided with connectivity, beginning with a minimum of five for each one of them.⁵ The Central Government will bear 75 % of the connectivity costs for 5 years, even for institutions not belonging to it. Content generation and connectivity along with provision for access devices for institutions and learners are the major components of the mission. So far, nearly 400 universities have been provided with 1 Gbps connectivity, or have been configured under the scheme and more than 14,000 colleges have also been provided VPN connectivity. Indian Institutes of Technology (IITs) campuses act as hubs for NME-ICT and others.

Within the large framework of NME-ICT Mission, seven IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras and Roorkee) and Indian Institute of Science (IISc) took another initiative for creating course contents in engineering and science under the banner, National Programme on Technology Enhanced Learning (NPTEL).

NPTEL programmes are largely video recordings of classroom lectures interspersed with visuals by the faculty members of the IITs and IISc. These video lectures are freely accessible by everyone independent of their geographic location and are in great demand among students because of two reasons. First, these are lectures by teachers from prestigious IITs; and for young Indian students admission in IITs is the biggest dream. Second, technical institutions in India have a serious deficiency of academic staff (estimated at about 40 %) for a very long time. These video lectures fulfil that huge gap and with quality inputs.

The programmes work well with highly motivated students whose future is relatively certain. However, the programmes are largely lectures and lack the support of science in human learning. As a result, they do not provide a viable model for ICT integration in other areas of higher education. Further, such programmes do not have the mission to ensure learning, hence, there is no mention and application of Learning Management System (LMS).

Online courses are yet another application of ICT in higher education. Though there are a few initiatives in online courses by the IITs, Indira Gandhi National Open University (IGNOU), and a few other private universities, these are still at infancy.

Another area of application of ICT in academic management is student evaluation. However, there are not many instances of online or on-demand examination based on a computerised question bank. IGNOU ran on demand examination for a few years, but discontinued.

There have been some major development initiatives in ICT in Research and Library management. The NKN and Information and Library Network (INFLIBNET) are two major initiatives. The NKN is a state-of-the-art multi-gigabit

⁵ <http://www.nmeict.iitkgp.ernet.in/Analogmain.htm>] {<http://www.it.iitb.ac.in/nmeict/home.do;jsessionid=47BCCAEB9A7BAFD8C8B7B2E768B6750>.

pan-India network for providing a unified high speed network backbone for all knowledge-related institutions in the country. The purpose of such a knowledge network goes to the very core of the country's quest for building quality institutions with the requisite research facilities and creating a pool of highly trained professionals. The NKN will enable scientists, researchers and students from different backgrounds and diverse geographies to work closely for advancing human development in critical and emerging areas.

The INFLIBNET was started in 1996 to network all the Libraries of Higher Education institutions in India. It created virtual networks of people and resources in academic institutions to provide efficient access to knowledge. Among the various activities of INFLIBNET, the UG—Infonet Internet Connectivity programme provides Internet bandwidth from 256 kbps to 2 Mbps to all the universities in the country. Another activity is the development of the Union Catalogue of Resources called “IndCat” (Indcat 2013, <http://indcat.inflibnet.ac.in/>), which is an important source of bibliographic information that can be used for collection, development, inter-library loans as well as for copy cataloguing and retro-conversion of bibliographic records.

One of the early initiatives, UGC—Infonet Connectivity Programme began in 2002 to network university campuses with the state-of-the-art campus-wide networks. Under UGC—Infonet, 10 Internet bandwidths were provided to more than 180 universities on fibre-optic leased line. After the launch of NKN and NME-ICT, UGC advised the universities to join NKN and NME-ICT, and wound up UGC-Infonet.

Besides these national initiatives of connecting libraries, a large number of universities in India maintain a computerised database for library management that includes procurement, accession, issue, and return of books and journals by readers and write-off procedures.

Open Education Resources and web portals are mechanisms for academic outreach. NPTEL is an example of academic outreach. Another important outreach initiative is Sakshat. It is a portal under NME-ICT. The portal comprises

- Student's Corner to 'Support self learning through virtual classes and testing services, nurture learners through guidance and counselling. Manage Scholarship and National Merit Scholarship Scheme'.
- Teacher's Corner to 'provide link to teachers' empowerment programmes'
- Knowledge Plus, 'to explore the world of web-based knowledge resources through e-books, e-journals and OER'
- Interact 'to communicate and share knowledge with teacher/mentor or peer group in real time and asynchronously' (Sakshat, 2013).

15.7 ICT in Student Services Management

Student Services Management comprises enrolment projection and monitoring, counselling and admission, examination results, records and alumni management.

As mentioned earlier, Indian higher education has witnessed massive expansion and diversification. This expansion, however, is not the result of planned action. There is no college mapping or course mapping across geographical locations. Naturally, there are huge regional disparities, gender disparity and rural–urban disparities in the provisions of higher education and enrolment; and a skewed distribution in the enrolment of students in arts versus other courses. More than 90 % of higher education students are in undergraduate courses and more than 90 % attend degree colleges. But these are not backed by any plan. They are by default. Though the Government of India has now set targets of enhancing enrolment in higher education, there is actually no projection of enrolment based on any meaningful database except for specific plan periods (Duraisamy 2008). Nonetheless, several individual researchers have projected enrolment in higher education using computerised data modelling on alternative scenarios (Parhar 2002a, b; Sharma 2012). Although this is a potential area for ICT intervention, Indian higher education is yet to make full use of it.

Pressured by the socio-economic aspiration of young people, enrolment is growing at an average of 6 % per annum. The gross number of students seeking admission even at this level of 6 % annual growth is huge. Student admission, especially in conventional universities and colleges is largely managed manually. Nonetheless, there are several state and institutional initiatives in ICT-driven counselling⁶ and admission. Odisha and Maharashtra provide examples of state initiatives in ICT supported student services management (Boxes 2, 3 and 4).

Box 2: Students Academic Management System of Odisha

Students Academic Management System (SAMS) was initiated by the Department of Higher Education (DHE), Orissa in collaboration with Orissa Computer Application Centre, IT Department (OCAC), and Cybertech Software and Multimedia Private Limited (CSM) in 2009. The system was initiated because most universities and colleges in the state were not adequately equipped to cater to the demand for greater access to better quality higher education institutions. The key objective of SAMS was to ensure that students and guardians can access the admission process in a simple, economical and less time-consuming manner. The second objective was to capacitate college administration to ensure effective and efficient information management and dissemination during the admission process.

⁶ In Indian Higher Education, the word ‘Counselling’ is used to mean advising the candidates about the courses that he/ she can be admitted to; also providing allied information on the course and its prospects.

The programme is supported by a well-integrated institutional structure, technical assistance, and continuous monitoring and evaluation of the system. The online database supported by SAMS is maintained and disseminated at three levels. At the block and district levels, it is maintained by 380 SAMS resource centres and 30 SAMS nodal colleges, respectively. At the state level, the Central SAMS laboratory (Bhubaneswar) plays a crucial role in coordinating the operation of the programme at the block and the district level. Experts from the department of higher education, IT department and OCAC train around 1,200 personnel, from different colleges, at the central laboratory for enhancing their technical skills and understanding about SAMS and ensuring the effective management of the admission process.

At present, almost 1,200 colleges have been integrated into the system. In the process, this expansion has ensured improved service delivery, access to better quality education, eliminating redundancy in the admission process, universalising better quality higher education and improved management of the education system (Governance Knowledge Center 2013).

Source <http://indiagovernance.gov.in/bestpractices.php?id=2085>.

Box 3: Digital University Framework of Maharashtra

Digital University Framework is a project started in 2006 in all universities in the state of Maharashtra. It is a web-based software framework to manage student lifecycle in Universities and Colleges in Maharashtra. This framework offers direct facilitation services to Universities, its affiliated Colleges and their students very fast, affordably, with high quality, and mass personalization and configurability. The framework enables the student to acquire informative services.

The objective of Digital University Framework is to provide services to students, all affiliated colleges and the University. The project provides:

- Personalised Services at the doorstep of students, reduced data duplication efforts at various levels due to single time student data entry;
- System generated outputs with no errors because of reduction in student cycles to colleges and universities. Direct student facilitation, students' online requests for various services through web portals; and
- Reduction in workload of university and college staff due to paperless transactions (eIndia Education Summit, 2011).

Source <http://eindia.eletsonline.com/2013/Hyderabad/Education/digital-university-framework-maharashtra-knowledge-corporation-limited/>.

Box 4: Anna University: Tamil Nadu

In Tamil Nadu, Anna University⁷ provides an important study of ICT in student admission management in a state.

a. Tamil Nadu Engineering Admissions (TNEA)

Anna University conducts counselling for candidates to over 500 Engineering Colleges in Tamil Nadu. The counselling process involves 150,000 (approximately) candidates for more than 67 branches in over 500 Engineering Colleges. All the computerisation activities related to TNEA are developed and managed by RCC. The way in which the whole process is organised and carried out has received all-round appreciation from both the public and the press.

b. Tamil Nadu Common Entrance Test (TANCET)

Anna University conducts year after year, the TANCET for M.E/M.Tech. candidates offered by colleges situated in Tamil Nadu. TANCET for MBA and MCA candidates is offered by Anna University for CEG Campus. The processing works relating to TANCET are carried out by the RCC.

c. Tamil Nadu Common Admissions (TANCA)

Anna University conducts the selection of candidates to Engineering Colleges in Tamil Nadu for M.E/M.Tech. Programmes and selection of candidates to CEG campus, Anna University Chennai for MBA and MCA Programmes. The process involves counselling nearly 17,000 candidates for more than 254 branches in over 110 Engineering Colleges. Counselling is conducted and the secured communication, related software design, development and management is done by RCC (Ramanujam Computing Center, 2013).

Source <http://www.annauniv.edu/rcc/projects.php>.

⁷ *Anna University (AU)*, ranked ninth best university in India, encompasses within it one of the oldest technical institutes in the world and has a history spanning 218 years (As of 2012). It was renamed 'Anna University' on 4 September 1978 as a unitary university. It became an affiliating university in 2001, absorbing about 250 engineering colleges in Tamil Nadu. Between 2007 and 2010 it was split into six universities, namely Anna University, Chennai, Anna University of Technology, Chennai, Anna University of Technology, Tiruchirappalli, Anna University of Technology, Coimbatore, Anna University of Technology Tirunelveli, and Anna University of Technology, Madurai. On September 14, 2011, a bill was passed to merge the universities. Anna University has once again become a single affiliating university for engineering colleges all over Tamil Nadu from August 1, 2012 (Sources of information Wikipedia Oct 20, 2013 and www.annauniv.edu/).

Use of ICT in student admission management is relatively common among private universities and also in open universities. For example, in IGNOU, beginning with admission notification on the net/website, call for online application, processing, fee transaction and confirmation of admission, and all such other services helps the university increase transparency and accountability. The services also facilitate responding to students' queries.

A related issue of student services is examination management. ICT is extensively used in examination management across all types of higher education, especially in processing of marks/grades, generating mark sheets and certificates, and publication of results. For example, in IGNOU, students' grade cards are posted on the website which the student can access with her enrolment number as the password. Question Banking and Examination Management are two modules of e-governance in Lovely Professional University, Jalandhar.

The extensive use of ICT in examination management, compared to that in other areas, is largely due to the sensitivity of the subject, because it demands accuracy. Also, the sheer magnitude of the work of examination management due to the massive number of candidates makes it necessary to use ICT for examination management; the relative advantages of technology, namely accuracy and time saving, are also the reasons for better adoption of technology in examination management.

15.8 ICT in Administrative Management

There are four major areas under administrative management, namely financial management, human resource management, management of infrastructure and office management including management of records and communications. ICT application in administrative management is neither uniform across all higher education institutions nor across various areas of administrative management.

A good example of the comprehensive use of ICT in administrative management is that of Lovely Professional University (LPU) in Jalandhar. LPU has created a University Management Information System comprising eight modules, namely Admissions, Human resources, Transportation, Examination, Question bank, e-Governance, Stock accounts, Payment Tracking System and Document Management System (Lovely Professional University. University Management System, 2013).

Though a majority of the universities do not have comprehensive application of ICT in management, financial management is relatively a popular area in ICT application. In a majority of the institutions, ICT application in financial management covers budgeting, staff salary and perks, financial control and accounting. The level of application varies from minimum application of a Tally kind of software to tailor-made software.

Box 5: IGNOU's ERP

IGNOU took the initiative to automate its Financial and core HR activities as part of ERP. To do so, IGNOU selected M/s TCS as a systems integrator under turnkey project and started implementation of the project in 2007. As part of it, established Data Centre with Servers (HP Blades) and Storage (SAN Storage of 5 TB), Application customisation/development for Finance and core HR activities using PeopleSoft's Finance and Supply Chain Management (FSCM) and Human Capital Management (HCM), Backend Database using Oracle 10g, Campus Networking and Digitisation. IGNOU named the system as ODLSOFT System. As most of its financial activities are performed through ODLSOFT system, the university opens and closes the financial year with the system itself. The ODLSOFT System improved the University's financial and core HR activities a lot in terms of transparency, timely completeness, responsiveness and accountability (Rao 2012).

Another area of relatively common application of ICT is human resource management or personnel management. This application largely deals with recruitment, posting, increments, promotion, pay revision, retirement benefits and leave management. Document management, in a majority of the higher education institutions, is still manual. There are very few instances of ICT integrated document management like in LPU where the agenda is paperless office or reducing the expenditure on stationery. Similarly, ICT application in infrastructure management is still not a common area.

15.9 Higher Education Information Systems: The Upcoming Story

As mentioned earlier, Indian higher education does not have a comprehensive database. The 12th Five Year Plan (FYP), in the chapter on quality acknowledged, 'One of the major lacunae in our system is the insufficient networking and poor database on the Indian Higher education system and non-availability of one window information of available human resource'. The 12th FYP decided to create a National Educational Resource Portal to make data of all the educational institutions of the country available; it also stipulated that uploading data on the portal would be mandatory. The proposed contents of the portal would be (we quote):

1. 'Human resources available in the Indian institutions of higher education;
2. Availability of experts in various fields for teaching, examinations, research collaboration, industrial consultancy;

3. Transparency of activities, display of new initiatives, innovative ideas—for sharing and mutual benefits;
4. Posting of model teaching and research programmes and the syllabus followed in the various institutions; Inclusive and Qualitative Expansion of Higher Education
5. Display of the examination systems, academic, administrative and examinations reforms initiated;
6. Model guidelines for the Choice-based Credit System (CBCS); and
7. Display of needs and vacancies of all educational institutions both in staff positions and the vacancies in several programmes offered’.

The 12th FYP bookmarks the need to create space for ‘modern management techniques with qualified, professionally trained and pro-active administrators suited for the 21st century requirements of e-governance, knowledge and professional skills’ when higher education institutions are still being run with ‘19th Century tools’. The document also laments that higher education lags in the use of ICT in governance compared to that in the administration and management of Railways, Revenue, Power, Airlines and other sectors. Though the 12th FYP underlines the need of ICT in administration and e-governance, it soft pedals the issue by saying ‘The 12th FYP should (please read ‘should’ as desirable, and not obligatory and accountable) target automation of administration and e-governance in the UGC and all the Universities/Colleges’ (<http://12thplan.gov.in/>).

It is important to mention that not many people engaged in higher education institutions have personal access to computing devices, though penetration of mobile phones is near universal. The government, as of now, does not have any policy to provide computing facilities to the faculty members of universities and colleges. The ICT, hence, is not yet a culture of higher education.

15.10 Conclusion

A critical study of the developments in Indian higher education and use of ICT in its administration reveals some interesting trends and patterns. First, as India gave up her conservative manpower planning approach to higher education, there has been a phenomenal expansion and diversity in Indian higher education since independence. Beginning with a few tiny colleges and universities at the dawn of independence, Indian higher education has emerged as the third largest system in the world. The diversification and flexibility in policies have provided space to the private providers of higher education. As of now (2013), private institutions of higher education constitute more than 60 % of the colleges and 29 % of the universities [Source: FICCI & EY: Higher Education in India: Twelfth Five Year Plan (2012–2017) at http://www.daaddelhi.org/imperia/md/content/passage-to-india/higher_education_institutions_.pdf] (Higher Education Institutions, 2013).

The expansion of higher education has been guided more by considerations of human capital formation and people's aspiration. Only recently, demographic dividends and improving the GER in higher education found space in the Indian discourse in higher education. No wonder that despite expansion and diversification of Indian higher education, there is no comprehensive database and management information system in higher education. The technology intervention in higher education, especially initiatives of the union government remained confined to academic processes only. Only in the 12th FYP, there is an articulated policy on developing a national resource portal.

However, several state governments and higher education institutions inducted ICT in management, based on the perceived needs and realisation of the potential of ICT in making governance much less expensive while increasing efficiency and effectiveness.

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